

**SECOND
APPEAL BRIEF**



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(A)

IDENTIFICATION PAGE

Applicant's Name

Worthington Armstrong Venture

Application No.

10/754,323

Filing Date of the Application

January 9, 2004

Title of the Invention

STAB-IN CONNECTOR

Name of the Examiner

Jeanette E. Chapman

Art Unit

3633

Title of the Paper

Appeal Brief

Attorney Docket No.

0326

Customer No.

02057

(B)

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(C)

REAL PARTY IN INTEREST

The real party in interest is:

Worthington Armstrong Venture
9 Old Lincoln Highway, Suite 200
Malvern, PA 19355
U.S.A.

Related companies:

Worthington Armstrong Venture is a joint venture,
formed in Delaware, between Worthington
Industries, Inc. and Armstrong World Industries,
Inc.

(D)

RELATED APPEALS AND INTERFERENCES

None

(E)

STATUS OF CLAIMS

Claim 1 Canceled

Claim 2 Canceled

Claim 3 Canceled

Claim 4 Canceled

Claim 5 Canceled

Claim 6 Canceled

Claim 7 Canceled

Claim 8 Canceled

Claim 9 Canceled

Claim 10 Canceled

Claim 11 Canceled

Claim 12 Canceled

Claim 13 Canceled

Claim 14 On Appeal

(F)

STATUS OF AMENDMENTS

Applicant filed a first Notice of Appeal and Appeal Brief on September 17, 2010. Rejected claims 2, 3, and 13 were the subject of the first Appeal.

A non-final Office Action by the Examiner responsive to such first Notice of Appeal and Appeal Brief issued on October 28, 2010.

In view of such non-final Office Action, applicant is initiating this new appeal by filing a new second Notice of Appeal under 37CFR 41.31 along with this new second Appeal Brief under 37CFR 41.37.

Along with this new second Notice of Appeal and new second Appeal Brief, appellant is simultaneously filing an Amendment

- (1) canceling claims 2, 3, and 13, and adding new independent claim 14, and
- (2) filing Replacement drawing sheets 1 and 2 showing the amended character numbers, in response to the Examiner's objections to drawing informalities.

(G)

SUMMARY OF CLAIMED SUBJECT MATTER

In suspended ceilings, grids of rolled T-beams are formed of cross beams connected to main beams. The grid supports panels, or drywall sheets, to form the suspended ceiling surface. The grid is supported from a structural ceiling by hang wires.

In the prior art in use at present within the suspended ceiling industry, a second identical connector on the end of a cross beam is formed with a straight cantilevered locking latch, pivoted from a base in such second identical connector. Such second identical connector is stabbed through a slot in a main beam. The cantilevered locking latch on the second identical connector (1) locks the second identical connector to the main beam, within the slot in the main beam, and (2) separately locks the second identical connector, to a first identical connector on an opposing cross beam, already in the slot, to form a connector-to-connector lock, sometimes referred to as a "handshake".

The present invention, as defined in present claim 14, is for an improved locking latch that permits the separate

connector-to-connector lock (the "handshake") referred to above under (2) to be more easily made.

In the improvement of the invention, the cantilevered locking latch, cantilevered from the base of the second identical connector, is formed with a curved portion, before extending in a straight lever fashion. Such curved portion of the locking latch delays contact of the locking latch with a side of the slot when the second identical connector is being stabbed through the slot. During the delay, the second identical connector being inserted into the slot to form the connector-to-connector lock, is capable of being adjusted vertically within the slot without being forced into contact with the first identical connector already in slot, thereby avoiding much friction, and work to overcome such friction.

Claim 14, the only claim on appeal, is written in Jepson form with first the prior art, and then the improvement on such prior art. In the following, Claim 14 is written with brief references to the application disclosure, by page and line, and to the drawings, by reference characters.

Claim 14. In a suspended ceiling grid connection, a connector-to-connector lock between opposing first and second identical connectors, each on the end of a cross beam, that extend through a slot in a main beam from opposite directions, with a cantilevered locking latch extending from a base in each such first and second identical connectors capable of forcing the connectors into locking contact with each other within the slot;

(The above defined prior art is disclosed in the specification from page 1, line 13, to page 3, line 1-2, and in the drawings in Figures 3 and 3a.)

the improvement comprising:

a cantilevered locking latch extending in a curve before extending in straight line fashion,

(page 9, lines 25 to 28 as follows: "In the improvement of the invention, the latch of the invention 40, as seen in Figures 2 and 2a, herein, is formed from the base 41 with a radius 42, for instance .04 inches, before extending in straight lever fashion.")

wherein the curve is capable of delaying forced contact of a second identical connector being stabbed through the slot with an opposing first identical connector already in the slot,

(page 9, lines 30 to 32; continued on page 10, lines 1 to 3 as follows: "Such a curve in locking latch 40 increases the distance 46 the second connector 21 or 22, enters into the slot 23 before it contacts the side of the slot 23 at 47

to create a resistance from such latch of the invention 40 against the side of the slot 23.")

(page 10, lines 12 to 18 as follows: "Further, the first contact of the latch of the invention 40 with the side of the slot 23 is further out from the point 51 of the latch of the invention 40 where it is joined to on the base 41, since part of the curved part of the latch of the invention 40 extends in the plane of the base 41 and is not exposed to contact by the side of the slot 23.")

(page 10, lines 29 to 31 as follows: "Thus, less force over a shorter distance is required to collapse the latch of the invention 40 than was required to collapse latch 10 in the prior art.")

whereby the second identical connector is capable of being adjusted vertically without being forced against the first identical connector already in the slot by the locking latch in contact with a side of the slot.

(Page 11, line 21 to 32 as follows: "In the present invention, the taper 38 at the leading edge of the connector 21, 22 is made relatively abrupt, at a steeper angle, so that a relative immediate adjustment is made vertically to the connector as it is being inserted into the slot 23. Even though a more steep, immediate adjustment would normally require a greater insertion force than that of a gradual insertion, there is less, rather than more force required. This reduction in force is obtained by the delayed contact of the locking latch of the invention 40 with the side of slot 23, since there is virtually no drag or resistance from the locking latch of the invention 40.")

(H)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claim 14 is unpatentable under 35 U.S.C.
 102(b) over Lickliter et al 3,312,488.

(I)

ARGUMENT

The Prior Art

In a suspended ceiling, cross beams and main beams are connected together to form a grid of repetitive rectangular openings, that support panels.

In a present day prior art connection in such suspended ceilings, opposing cross beams are connected to a main beam by inserting a first and second identical connector on the end of each cross beam into a slot in the web of a main beam from opposite sides of the main beam, one at a time.

Such a present day prior art connector is formed with a straight locking latch, cantilevered from a base in the connector, that is squeezed into a closed position, as it passes through the slot, and then springs open after it passes through the slot (1) locking the connector, and the cross beam on which it is attached, to the main beam. In passing through the slot, the locking latch also (2) forces the connector to which it is attached into locking engagement with an identical connector already in the slot on the opposing cross beam, to form a separate connector-to-connector lock (the "handshake").

Thus, two different, and separate, (1) and (2), locking actions occur.

The resistance to creating the (2) connector-to-connector lock (the "handshake") begins when the cantilevered straight latch on the second identical connector into the slot contacts the side of the slot as the latch is being forced into the slot. Such contact also forces the connector against a first identical connector already in the slot, as referred to above, while the second identical connector is being adjusted vertically within the slot, in accordance with the vertical contours of the second identical connector, so the detents on the faces of the first and second connectors can directly engage each other.

Thus, when the second identical connector into the slot is fully inserted, from the opposite direction to the first identical connector already in the slot, the second identical connector is locked to (1) the main beam, by the cantilevered locking latch, and (2) separately to the first identical connector on the opposing cross beam, already in the slot (the connector-to-connector lock, or the "handshake") wherein the locking latch forces the connectors into contact with one another to lock together.

The Improvement

The improvement as claimed, is in the connector-to-connector lock (the "handshake"), referred to above.

In being stabbed through the slot in the main beam, a present-day prior art straight cantilevered locking latch extending from a base in the connector, as referred to above, contacts the side of the slot in the main beam virtually immediately and is flexed closed to permit the locking latch to pass through the slot. After passing through the slot, it reopens.

In the present improvement as set forth in claim 14, the cantilevered locking latch extends in a curve from a base in the connector, before extending in straight line fashion, as seen in Figures 2 and 2a.

By extending the locking latch in a curve, before extending in straight line fashion, as claimed, contact between the latch and the side of the slot is delayed. During such delay, no friction occurs between either

- (1) the latch and the side of the slot, or
- (2) the second identical connector being inserted, and the opposing first identical connector already in the slot.

During such delay, the second identical connector being inserted into the slot is being positioned vertically

within the slot by the contoured perimeter of the locking latch, with no resistance from the first identical connector already in the slot. The first and second identical connectors are not being forced together by the locking latch on the second identical connector being squeezed against the side of the slot, as happened in the prior art. There is a delay in such contact due to the curve in the locking latch.

Because of such delay in forced contact between the first identical connector already in the slot, and the second identical connector being inserted into the slot from an opposing direction, there is a substantial reduction in friction in making a connector-to-connector connection (the "handshake"), as shown in the graphs and in the drawings of the application. Since there is less friction, there is less work necessary to overcome such friction. In a suspended ceiling with hundreds, and even thousands of such connections, wherein a grid for panels or drywall is formed, the total work saved in constructing the ceiling, can be enormous.

The Rejection

Claims 2, 3, and 13, now cancelled, were rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lickliter et al 3,312,488 (Lickliter '488). New pending

claim 14, which includes all the limitations in now canceled independent claim 13, more clearly defines the invention as drawn to the connector-to-connector connection (the "handshake"), designated (2) above.

Lickliter '488 has no such connector-to-connector connection (the "handshake") designated (2) above, and no curved locking latch that relates to such a connector-to-connector connection. Lickliter '488 only has a connector to main beam connection, designated (1) above.

The locking latch in Lickliter '488 is shown and described as a "spring finger" (col. 2, line 67; Figures 2 and 8), element 42. Clearly, this is a straight latch, that, when contacting the side of the slot is squeezed into the opening 32, so that neck 28 and spring finger 42 can be inserted through the slot 12, after which spring finger 42 can again flex out of the opening 32 and lock neck 28 in slot 12. This is simply the connection of the connector on the cross beam to the main beam, designated (1) above.

In Lickliter '488, there is no locking of neck 28 to the neck already in the slot from the opposite direction; hence there is no connector-to-connector connection or "handshake" between opposing connectors in the slot. The opposing connectors in the slot do not contact one another, because each has its own groove in the slot, which is in

the form of an H, with the opposing connectors being inserted in the opposing vertical grooves of the H. This was the general practice in the prior art 40 years ago, when the Lickliter '488 patent issued.

The curve 44 of Lickliter '488 referred to in the rejection is not in the spring finger 42, which is the locking latch that locks the connector to the main beam in Lickliter '488, but rather is on the front end of the neck simply to guide the front of the neck 28 into the slot 12, at the beginning of the insertion through such slot 12. It is a rigid curve and is not involved in the locking connection. Curve 44 works entirely independently of the straight spring finger 42 locking latch in Lickliter '488. Hence, there is nothing in Lickliter '488 that teaches or suggests the present invention, as claimed, to one skilled in the art.

Virtually all connectors today in the suspended ceiling art are of the type in the present application, with a separate connector-to-connector lock (the "handshake") (Connection (2) referred to above). When the faces of the first and second identical connectors are forced together by the locking latch, detents on the connectors engage one another to form the connector-to-connector lock (the "handshake"). In the connection of the

Lickliter '488 patent, which is over 40 years old, the connector on each cross beam only connected with the main beam alone (Connection (1) referred to above).

It is primarily because of the (2) connector-to-connector connection (the "handshake") that in the present day prior art, large forces are encountered when the connectors in the slot are being engaged by being forced together face-to-face so that detents on the faces engage, and it is these forces that are being greatly reduced, by the curved locking lever of the invention.

The affidavit of Gale E. Sauer, a person skilled in the art of suspended ceilings, supports the above analysis and conclusion. Such affidavit is included in the Evidence Appendix.

Summary

The Lickliter '488 patent represents the early art in suspended ceiling connections, wherein the cross beams were only connected to the main beam, in an H profile slot.

It was only later that the industry developed the additional direct cross beam connection to the opposing cross beam in a connector-to-connector lock (the "handshake").

Claim 14 now clearly defines the improvement as a curved locking latch in a connector-to-connector connection

between a first and second opposing identical connector on the ends of opposing cross beams. The connection is within a slot on a main beam.

The cited reference, Lickliter '488, has no such connector-to-connector connection, and no curved locking latch capable of delaying forced contact between connectors in such a connector-to-connector connection.

Lickliter '488 has a straight locking finger that locks his cross beam to the main beam. The only curve in Lickliter connection is a fixed bend at the front of his rigid locking neck. (His straight locking finger extends from such rigid neck). The fixed curve on the rigid neck is only for guiding the rigid locking neck into the slot in the main beam. Such a construction is entirely remote from applicant's claimed invention.

Appellant respectfully requests reconsideration of his application for patent, and early allowance.

(J)

CLAIMS APPENDIX

Claim 14. In a suspended ceiling grid connection, a connector-to-connector lock between opposing first and second identical connectors, each on the end of a cross beam, that extend through a slot in a main beam from opposite directions, with a cantilevered locking latch extending from a base in each such first and second identical connectors capable of forcing the connectors into locking contact with each other within the slot; the improvement comprising:

a cantilevered locking latch extending in a curve before extending in straight line fashion,

wherein the curve is capable of delaying forced contact of a second identical connector being stabbed through the slot with an opposing first identical connector already in the slot,

whereby the second identical connector is capable of being adjusted vertically without being forced against the first identical connector already in the slot by the locking latch in contact with a side of the slot.

No claims have been allowed in the application.

There are no related pending applications, or any patents issued on related applications.

(K)

EVIDENCE APPENDIX

Affidavit, including Statement, of Gale E. Sauer is attached.

4. I am now retired, and have been for 5 years.
5. I am familiar with many patents relating to the ceiling grid industry. I am also familiar with many products made and sold over the years, in the ceiling grid industry.
6. The attached statement is true to the best of my information and belief.

Gale E. Sauer
Gale E. Sauer

Sworn to and subscribed before me this 9 day of
September, 2010.

Carol A. Snyder
Notary Public

CAROL A. SNYDER #01SN6028558
Notary Public, State of New York
Qualified in Chautauqua County
My Commission Expires August 2, 2013

STATEMENT

I have read, and studied, and understand, the following:

1. U. S. Patent Application No. 10/754,323 (subject '323 application), filed January 9, 2004, for STAB-IN CONNECTOR.
2. Responses dated March 11, 2010, and April 5, 2010.
3. An Office Action dated May 12, 2010 rejecting the subject '323 application in view of Lickliter et al 3,312,488 (Lickliter '488).
4. The Lickliter '488 patent.

The subject '323 application, at great length, discloses with words, charts, and figures, the invention now claimed, and the benefits secured from such invention. The invention is directed to a connector, used in a ceiling grid, with a locking latch that first extends from a flat base in a curve, and then as a straight lever.

I worked at Flangeklamp Corporation, after the Lickliter '488 patent issued, and am familiar with the subject matter of the Lickliter '488 patent. Mr. Lickliter was the founder and president of Flangeklamp.

In my opinion, the subject matter disclosed and claimed in the subject '323 application was not obvious to one skilled in the ceiling grid industry in view of the Lickliter '488 patent, for the following reasons:

I am familiar with the connector disclosed in United States Patent No. 3,312,488 (Lickliter '488), and the commercial embodiment of such patent, made and sold by Flangeklamp, the assignee of the patent.

I was employed by Flangeklamp when such commercial embodiment was being sold, which was around 1967-1970.

Lickliter '488 is a connector that connects a cross beam to a slot in the main beam. A second cross tee connector is inserted into the same main beam slot from the opposing direction. Each opposing cross tee connector is locked only to the main runner; there is no cross tee to cross tee locking, which is commonly referred to as a "handshake". To the best of my knowledge, there are not any connectors on the market today that can meet current codes without using some form of "handshake". Further, cross tee to main beam locking must be maintained to enable an efficient progressive assembly process.

The connection of the present application connects not only a cross beam to a main beam through a slot, but also in the present invention, the opposing cross beams in the slot connect to each other in a "handshake", as well as to the main beam. Such a connection encounters a frictional resistance in its locking to the main runner, and an added frictional resistance to engage the "handshake".

In Lickliter '488, there is only, in making the connection, the frictional resistance between the cross tee connector and the main beam slot. This is desirable, but the Lickliter '488 connector will not meet today's code requirements for stronger pull apart resistance, since it does not have the "handshake" connection.

In the present invention, as is explained at length in the specification, the required insertions forces can be minimized by extending the locking lever in an arc before extending in a straight line. The benefit, as confirmed in test data, is that far less work is required in assembling the grid of beams in a suspended ceiling.

Virtually all connections in the grid of present day suspended ceilings use both the "handshake" (cross beam to cross beam) and the cross beam to main beam connections. The invention claimed results in faster connections requiring less work to assemble.

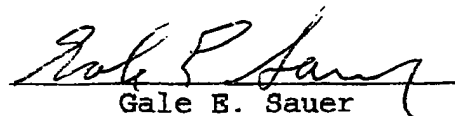
The curve 44, in the Lickliter '488 connection, is not prior art. The purpose of curve 44, in Lickliter '488, is simply to guide his connector into the slot, in the event such guidance is necessary. Curve 44 does not bend or pivot, but remains fixed.

As seen in Figure 2 of Lickliter '488, a middle body 34 has a spring finger 42 struck therefrom that extends through a window opening 32 in a rigid bar element 24 that clamps the middle body 34 to the web of the cross beam.

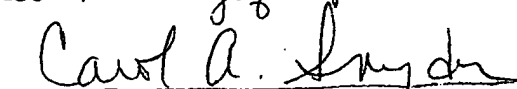
As the connector on the cross beam is inserted through one side of the H figured slot, the locking lever is forced back into the window opening 32 of the bar element 24 to permit the flat bar member to pass through the slot, after which the locking lever springs out to engage the web of the T-beam to lock the cross beam to the main beam.

In summary, it is my opinion that Lickliter '488 is an entirely different locking mechanism than that in the current Application 10,754,323, and that the present invention was not obvious in view of Lickliter '488.

The attached statement is true to the best of my information and belief.


Gale E. Sauer

Sworn to and subscribed before me
this 9th day of September, 2010


Notary Public

CAROL A. SNYDER #01SN6028558
Notary Public, State of New York
Qualified in Chauquett County
My Commission Expires August 2, 2013

(L)

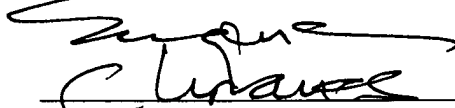
RELATED PROCEEDINGS APPENDIX

None

7 December
2010

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Respectfully submitted,



SIGNATURE OF PRACTITIONER

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